AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An imaging apparatus for obtaining depth information of an object to be imaged, comprising:

an image capturing section for capturing three or more parallactic images of the object viewed from three or more different viewpoints which are not arrayed in a line;

a displacement detector for detecting plural displacements with respect to images of a specific region of the object, each displacement being detected between any two of the three or more parallactic images; and

a depth calculator for calculating depth information with respect to the specific region, based on the plural displacements detected by the displacement detector wherein the depth calculator has predetermined ratios for consideration of the plural displacements to calculate the depth information, and, for each specific region of the changes the consideration ratios.

2. (Cancelled).

3. (Currently Amended) The imaging apparatus as claimed in claim [2] 1, wherein the depth calculator changes the consideration ratios depending on an azimuth of the specific region of the object viewed from near a center position of the three or more viewpoints.

4. (Original) The imaging apparatus as claimed in claim 3, wherein the depth calculator gives a consideration smaller ratio to the displacement detected between a particular pair from the three or more parallactic images, viewed from a corresponding pair from the three or more viewpoints, if the specific region of the object is nearer a line being drawn between the corresponding pair of the viewpoints, and the depth calculator gives a greater consideration ratio to the displacement if the specific region is nearer a plane which includes a middle point of a line segment drawn between the corresponding pair of viewpoints and is perpendicular to the line segment between the corresponding pair of viewpoints.

5. (Original) The imaging apparatus as claimed in claim 3, wherein, if an angle of the azimuth of the specific region of the object is less than 30 degree when viewed from a middle point between a particular pair from the three or more viewpoints, the depth calculator calculates the depth information based on the displacement detected between the corresponding parallactic images viewed from said pair of viewpoints.

6. (Original) The imaging apparatus as claimed in claim 1, wherein the viewpoints comprise three viewpoints, and the three viewpoints define a regular triangle.

7. (Original) The imaging apparatus as claimed in claim 1, wherein the image capturing section includes three or more optical lenses having a wide visual angle and being located at respective three or more viewpoints, the three or more parallactic images being captured by the three or more optical lenses.

8. (Original) The imaging apparatus as claimed in claim 7, wherein each of the three or more optical lenses has an optical axis, and directions of the optical axes of the three or more optical lenses are substantially identical.

9. (Original) The imaging apparatus as claimed in claim 7, wherein the three or more optical lenses comprise fish-eye lenses, and the depth calculator calculates the depth information through a whole azimuth of the object captured by the fisheye lenses of the image capturing section.

10. (Original) The imaging apparatus as claimed in claim 7, having three viewpoints arranged to define a regular triangle.

11. (Original) The imaging apparatus as claimed in claim 1, wherein the image capturing section includes:

an optical lens having a wide visual angle; and

a driver for moving the optical lens to the three or more viewpoints, wherein the image capturing section captures the three or more parallactic images when the driver moves the optical lens to the three or more viewpoints.

12. (Original) The imaging apparatus as claimed in claim 11, wherein the optical lens has an optical axis, and all directions of the optical axis of the optical lens at the three or more viewpoints are substantially identical.

13. (Original) The imaging apparatus as claimed in claim 11, wherein the optical lens comprises a fish-eye lens, and the depth calculator calculates the depth information through a whole azimuth of the object captured by the fish-eye lens of the image capturing section.

14. (Original) he imaging apparatus as claimed in claim 11, wherein the driver moves the optical lens so as for a movement locus of the optical lens to define a circle, and wherein the three or more viewpoints are located on the circle of the movement locus.

15. (Original) The imaging apparatus as claimed in claim 14, wherein the viewpoints comprise three viewpoints located on the circle of the movement locus, the three viewpoints defining a regular triangle.

16. (Original) The imaging apparatus as claimed in claim 1, wherein the image capturing section includes:

two optical lenses positioned at two different viewpoints of the three or more viewpoints, each of the optical lenses having a wide visual angle; and

a driver for moving either one of the two optical lenses to another one of the three or more viewpoints which is not on a line drawn between the two different viewpoints, wherein the image capturing section captures parallactic images of the object by the two optical lenses and, when the driver moves the either one of the two optical lenses, captures the other parallactic images.

17. (Original) The imaging apparatus as claimed in claim 16, wherein the other viewpoint to which the driver moves the either of the two optical lenses is the third viewpoint, and the two viewpoints before moving and the third viewpoint form a regular triangle.

18. (Original) The imaging apparatus as claimed in claim 16, wherein each of the two optical lenses has an optical axis, and all directions of the optical axes of the two optical lenses at the three or more viewpoints are substantially identical.

19. (Original) The imaging apparatus as claimed in claim 16, wherein the two optical lenses comprise fish-eye lenses, and the depth calculator calculates the depth information through a whole azimuth of the object captured by the fish-eye lenses of the image capturing section.

20. (Original) An image processing apparatus for obtaining depth information of an object to be imaged, comprising:

an input unit for inputting three or more parallactic images of the object viewed from three or more viewpoints which are not arrayed in a line;

a displacement detector for detecting plural displacements of any pair from the three or more parallactic images with respect to a specific region of the object; and

a depth calculator for calculating depth information of the specific region of the object, wherein ratios for consideration of the plural displacements are changed with respect to the specific region.

21. (Original) The image processing apparatus according to claim 20, further comprising:

an image transformer for transforming the images of the object inputted by the input unit, wherein the image transformer subjects the images to a coordinates transformation based on the depth information calculated by the depth calculator with respect to the specific region of the object.

22. (Original) The image processing apparatus as claimed in claim 21, wherein, if the image inputted by the input unit is a whole azimuth image captured by a fish-eye lens, the image transformer transforms the whole azimuth image into a perspective projection image by the coordinates transformation.

23. (Original) The image processing apparatus as claimed in claim 21, wherein the image transformer generates an orthogonal projection image of the object by the coordinates transformation.

24. (Original) A method for processing an image to obtain depth information of an object to be imaged, comprising steps of:

inputting three or more parallactic images of the object viewed from three or more different viewpoints which are not arrayed in a line;

detecting plural displacements with respect to a specific

region of the object, each displacement being detected between any two of the three or more parallactic images; and

calculating depth information of the specific region of the object, wherein ratios for consideration of the plural displacements are changed with respect to the specific region.

25. (Original) A recording medium storing a computer program for obtaining depth information of an object to be imaged, comprising:

an input module for inputting three or more parallactic images of the object viewed from three or more different viewpoints which are not arrayed in a line;

a displacement detecting module for detecting plural displacements with respect to a specific region of the object, each displacement being detected between any two of the three or more parallactic images; and

a depth calculating module for calculating depth information of the specific region of the object, wherein ratios for consideration of the plural displacements are changed with respect to the specific region.

26. (Currently Amended) A system for determining distance from an object for generating an image of said object, comprising:

at least one lens for capturing three or more images of the object, said images being captured from corresponding

positions of said at least one lens which are not arrayed in a line;

a displacement detector for detecting a plurality of parallactic displacements, each displacement being detected ~~with respect to~~ from two of said three or more images w.r. to a specific region of the object; and

a depth calculator for calculating a distance from said object based upon the plurality of parallactic displacements detected by the displacement detector wherein ratios for consideration of the plural displacements are changed with respect to the specific region.

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27. (Original) The system as claimed in claim 26, wherein said displacement detector detects said plurality of parallactic displacements with respect to images of corresponding regions of the object; said two of said three or more images corresponding to each displacement are selected so as to provide a largest displacement with respect to a corresponding region thereof; and said distance from said object is calculated by a distribution of distances from said object, each distance of said distribution corresponding to a region of said regions of the object.

28. (Original) The system as claimed in claim 26, wherein said displacement detector detects said plurality of parallactic

displacements with respect to images of a corresponding region of the object; said depth calculator includes predetermined ratios of how much each one of said plurality of parallactic displacements is to be considered in calculating a distance from said corresponding region of the object; and said distance is calculated based upon said ratios of said parallactic displacements.

29. (Original) The system as claimed in claim 26, wherein said displacement detector detects said plurality of parallactic displacements with respect to images of a corresponding region of the object; said depth calculator calculates respective distances from said corresponding region based on said plurality of parallactic displacements; and a distance from said corresponding region of the object is calculated by a weighted mean of said respective distances based upon said parallactic displacements.

30. (Original) The system as claimed in claim 26, wherein said displacement detector detects said plurality of parallactic displacements with respect to images of a corresponding region of the object; and said depth calculator calculates a distance from said corresponding region of the object based upon a parallactic displacement having a highest detection accuracy of said plurality of parallactic displacements.

31. (Original) The system as claimed in claim 26, wherein said displacement detector detects said plurality of parallactic displacements with respect to images of a corresponding region of the object; said depth calculator calculates an initial distance from said corresponding region of the object based upon a parallactic displacement having a highest detection accuracy of said plurality of parallactic displacements and determines ratios of how much each one of said plurality of parallactic displacements is to be considered in calculating a final distance from said corresponding region of the object, said ratios being determined based upon an azimuth angle of said corresponding region and said initial distance from said corresponding region, wherein said final distance is calculated based upon said ratios of said parallactic displacements.

32. (Original) The system as claimed in claim 26, wherein said system includes an imaging apparatus.

33. (Original) The system as claimed in claim 26, wherein said system includes an image processing apparatus.

34. (Original) The system as claimed in claim 26, wherein said system includes a computer.